

SEQUENCE LISTING



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 HIATT, ANDREW C.
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<120> NOVEL EPITHELIAL TISSUE TARGETING AGENT

<130> EPI3004B

<140> 09/005,318

<141> 1998-01-09

<150> 08/782,481

<151> 1997-01-10

<150> 09/005,167

<151> 1998-01-09

<160> 113

<170> PatentIn Ver. 2.1

<210> 1

<211> 137

<212> PRT

<213> Homo sapiens

<400> 1

Gln Glu Asp Glu Arg Ile Val Leu Val Asp Asn Lys Cys Lys Cys Ala
 1 5 10 15

Arg Ile Thr Ser Arg Ile Ile Arg Ser Ser Glu Asp Pro Asn Glu Asp
 20 25 30

Ile Val Glu Arg Asn Ile Arg Ile Ile Val Pro Leu Asn Asn Arg Glu
 35 40 45

Asn Ile Ser Asp Pro Thr Ser Pro Leu Arg Thr Arg Pro Val Tyr His
 50 55 60

Leu Ser Asp Leu Cys Lys Lys Cys Asp Pro Thr Glu Val Glu Leu Asp
 65 70 75 80

Asn Gln Ile Val Thr Ala Thr Gln Ser Asn Ile Cys Asp Glu Asp Ser
 85 90 95

Ala Thr Glu Thr Cys Tyr Thr Tyr Asp Arg Asn Lys Cys Tyr Thr Ala
 100 105 110

Val Val Pro Leu Val Tyr Gly Gly Glu Thr Lys Met Val Glu Thr Ala
 115 120 125

Leu Thr Pro Asp Ala Cys Tyr Pro Asp
 130 135

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<210> 2
 <211> 135
 <212> PRT
 <213> Mus sp.

<400> 2
 Gln Asp Glu Asn Glu Arg Ile Val Val Asp Asn Lys Cys Lys Cys Ala
 1 5 10 15
 Arg Ile Thr Ser Arg Ile Ile Pro Ser Ala Glu Asp Pro Ser Gln Asp
 20 25 30
 Ile Val Glu Arg Asn Val Arg Ile Ile Val Pro Leu Asn Ser Arg Glu
 35 40 45
 Asn Ile Ser Asp Pro Thr Ser Pro Met Arg Thr Lys Pro Val Tyr His
 50 55 60
 Leu Ser Asp Leu Cys Lys Lys Cys Asp Thr Thr Glu Val Glu Leu Glu
 65 70 75 80
 Asp Gln Val Val Thr Ala Ser Gln Ser Asn Ile Cys Asp Ser Asp Ala
 85 90 95
 Glu Thr Cys Tyr Thr Tyr Asp Arg Asn Lys Cys Tyr Thr Asn Arg Val
 100 105 110
 Lys Leu Ser Tyr Arg Gly Gln Thr Lys Met Val Glu Thr Ala Leu Thr
 115 120 125
 Pro Asp Ser Cys Tyr Pro Asp
 130 135

<210> 3
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 <212> PRT
 <213> Oryctolagus cuniculus

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 Asp Asp Glu Ala Thr Ile Leu Ala Asp Asn Lys Cys Met Cys Thr Arg
 1 5 10 15
 Val Thr Ser Arg Ile Ile Pro Ser Thr Glu Asp Pro Asn Glu Asp Ile
 20 25 30
 Val Glu Arg Asn Ile Arg Ile Val Val Pro Leu Asn Asn Arg Glu Asn
 35 40 45
 Ile Ser Asp Pro Thr Ser Pro Leu Arg Arg Asn Pro Val Tyr His Leu
 50 55 60
 Ser Asp Val Cys Lys Lys Cys Asp Pro Val Glu Val Glu Leu Glu Asp
 65 70 75 80
 Gln Val Val Thr Ala Thr Gln Ser Asn Ile Cys Asn Glu Asp Asp Gly
 85 90 95

Val Pro Glu Thr Cys Tyr Met Tyr Asp Arg Asn Lys Cys Tyr Thr Thr
 100 105 110

Met Val Pro Leu Arg Tyr His Gly Glu Thr Lys Met Val Gln Ala Ala
 115 120 125

Leu Thr Pro Asp Ser Cys Tyr Pro Asp
 130 135

<210> 4
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 <213> Bos sp.

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 1 5 10 15
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 20 25 30
 Val Glu Arg Asn Ile Arg Ile Ile Val Pro Leu Asn Thr Arg Glu Asn
 35 40 45
 Ile Ser Asp Pro Thr Ser Pro Leu Arg Thr Glu Pro Lys Tyr Asn Leu
 50 55 60
 Ala Asn Leu Cys Lys Lys Cys Asp Pro Thr Glu Ile Glu Leu Asp Asn
 65 70 75 80
 Gln Val Phe Thr Ala Ser Gln Ser Asn Ile Cys Pro Asp Asp Asp Tyr
 85 90 95
 Ser Glu Thr Cys Tyr Thr Tyr Asp Arg Asn Lys Cys Tyr Thr Thr Leu
 100 105 110
 Val Pro Ile Thr His Arg Gly Val Thr Arg Met Val Lys Ala Thr Leu
 115 120 125
 Thr Pro Asp Ser Cys Tyr Pro Asp
 130 135

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 <213> Rana sp.

<220>
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 <222> (47)
 <223> Variable amino acid

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 <222> (88)..(89)
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 <222> (91)
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Glu	Gln	Glu	Tyr	Ile	Leu	Ala	Asn	Asn	Lys	Cys	Lys	Cys	Val	Lys	Ile
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Ser	Ser	Arg	Phe	Val	Pro	Ser	Thr	Glu	Arg	Pro	Gly	Glu	Glu	Ile	Leu
			20					25						30	
Glu	Arg	Asn	Ile	Gln	Ile	Thr	Ile	Pro	Thr	Ser	Ser	Arg	Met	Xaa	Ile
		35					40					45			
Ser	Asp	Pro	Tyr	Ser	Pro	Leu	Arg	Thr	Gln	Pro	Val	Tyr	Asn	Leu	Trp
	50					55					60				
Asp	Ile	Cys	Gln	Lys	Cys	Asp	Pro	Val	Gln	Leu	Glu	Ile	Gly	Gly	Ile
65					70					75					80
Pro	Val	Leu	Ala	Ser	Gln	Pro	Xaa	Xaa	Ser	Xaa	Pro	Asp	Asp	Glu	Cys
				85					90					95	
Tyr	Thr	Thr	Glu	Val	Asn	Phe	Lys	Lys	Lys	Val	Pro	Leu	Thr	Pro	Asp
			100					105					110		
Ser	Cys	Tyr	Glu	Tyr	Ser	Glu									
			115												

<210> 6
 <211> 128
 <212> PRT
 <213> Lumbricus sp.

<400> 6

Asn	Lys	Cys	Met	Cys	Thr	Arg	Val	Thr	Ala	Arg	Ile	Arg	Gly	Thr	Arg
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Glu	Asp	Pro	Asn	Glu	Asp	Ile	Val	Glu	Arg	Tyr	Ile	Arg	Ile	Asn	Val
			20					25					30		
Pro	Leu	Lys	Asn	Arg	Gly	Asn	Ile	Ser	Asp	Pro	Thr	Ser	Pro	Leu	Arg
		35				40						45			
Asn	Gln	Pro	Val	Tyr	His	Leu	Ser	Pro	Ser	Cys	Lys	Lys	Cys	Asp	Pro
	50					55					60				
Tyr	Glu	Asp	Gly	Val	Val	Thr	Ala	Thr	Glu	Thr	Asn	Ile	Cys	Tyr	Pro
65					70					75					80
Asp	Gln	Gly	Val	Pro	Gln	Ser	Cys	Arg	Asp	Tyr	Cys	Pro	Glu	Leu	Asp
			85						90					95	
Arg	Asn	Lys	Cys	Tyr	Thr	Val	Leu	Val	Pro	Pro	Gly	Tyr	Thr	Gly	Glu
			100					105					110		

Thr Lys Met Val Gln Asn Ala Leu Thr Pro Asp Ala Cys Tyr Pro Asp
 115 120 125

<210> 7
 <211> 421
 <212> DNA
 <213> Artificial Sequence

<220>
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 <222> (1)..(414)

<220>
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 <222> (1)..(6)

<220>
 <221> mat_peptide
 <222> (7)..(414)

<220>
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 nucleotide sequence

<400> 7
 gat cag gaa gat gaa cgt att gtt ctg gtt gac aac aag tgc aag tgt 48
 Asp Gln Glu Asp Glu Arg Ile Val Leu Val Asp Asn Lys Cys Lys Cys
 -1 1 5 10

gct cgt att act tct aga atc atc cgt agc tca gag gac cca aat gaa 96
 Ala Arg Ile Thr Ser Arg Ile Ile Arg Ser Ser Glu Asp Pro Asn Glu
 15 20 25 30

gat ata gtc gaa cgt aac atc cgt atc atc gtc cca ctg aat aac cgg 144
 Asp Ile Val Glu Arg Asn Ile Arg Ile Ile Val Pro Leu Asn Asn Arg
 35 40 45

gag aat atc tca gat cct aca agt ccg ttg cgc aca cgc ttc gta tac 192
 Glu Asn Ile Ser Asp Pro Thr Ser Pro Leu Arg Thr Arg Phe Val Tyr
 50 55 60

cac ctg tca gat ctg tgt aag aag tgt gat cca aca gag gta gag ctg 240
 His Leu Ser Asp Leu Cys Lys Lys Cys Asp Pro Thr Glu Val Glu Leu
 65 70 75

gac aat cag ata gtc act gcg act caa agc aac att tgc gat gag gac 288
 Asp Asn Gln Ile Val Thr Ala Thr Gln Ser Asn Ile Cys Asp Glu Asp
 80 85 90

agc gct aca gaa acc tgc agc acc tac gat agg aac aaa tgc tac acg 336
 Ser Ala Thr Glu Thr Cys Ser Thr Tyr Asp Arg Asn Lys Cys Tyr Thr
 95 100 105 110

gcc gtg gtt ccg ctc gtg tat ggt gga gag aca aaa atg gtg gaa act 384
 Ala Val Val Pro Leu Val Tyr Gly Gly Glu Thr Lys Met Val Glu Thr
 115 120 125

gcc ctt acg ccc gat gca tgc tat ccg gac tgaattc 421
 Ala Leu Thr Pro Asp Ala Cys Tyr Pro Asp
 130 135

<210> 8
 <211> 215
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> CDS
 <222> (1)..(213)

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide sequence

<400> 8
 gat cag aag tgc aag tgt gct cgt att act tct aga atc atc cgt agc 48
 Asp Gln Lys Cys Lys Cys Ala Arg Ile Thr Ser Arg Ile Ile Arg Ser
 1 5 10 15
 tca gag gac cca aat gaa gat ata gtc gaa cgt aac atc cgt atc atc 96
 Ser Glu Asp Pro Asn Glu Asp Ile Val Glu Arg Asn Ile Arg Ile Ile
 20 25 30
 gtc cca ctg aat aac cgg gag aat atc tca gat cct aca agt ccg ttg 144
 Val Pro Leu Asn Asn Arg Glu Asn Ile Ser Asp Pro Thr Ser Pro Leu
 35 40 45
 cgc aca cgc ttc gta tac cac ctg tca gat ctg tgt aag aag gat gag 192
 Arg Thr Arg Phe Val Tyr His Leu Ser Asp Leu Cys Lys Lys Asp Glu
 50 55 60
 gac agc gct aca gaa acc tgc tg 215
 Asp Ser Ala Thr Glu Thr Cys
 65 70

<210> 9
 <211> 140
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide sequence

<400> 9
 ctagaatcat ccgtagctca gaggacccaa atgaagatat agtcgaacgt aacatccgta 60
 tcatcgctccc actgaataac cgggagaata tctcagatcc tacaagtccg ttgcgcacac 120
 gcttcgtata ccacctgtca 140

<210> 10
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide sequence

<400> 10
 gatcagaagt gcaagtgtgc tcgtattact t 31

<210> 11
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> CDS
 <222> (1)..(42)

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide sequence

<400> 11
 gat ctg tgt aag aag gat gaa gat tcc gct aca gaa acc tgc tg 44
 Asp Leu Cys Lys Lys Asp Glu Asp Ser Ala Thr Glu Thr Cys
 1 5 10

<210> 12
 <211> 109
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide sequence

<400> 12
 gcacctacga taggaacaaa tgctacacgg ccgtggttcc gctcgtgtat ggtggagaga 60
 caaaaatggt ggaaactgcc cttacgcccg atgcatgcta ccctgactg 109

<210> 13
 <211> 286
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> CDS
 <222> (1)..(279)

<220>
 <223> Description of Artificial Sequence: Synthetic
 nucleotide sequence

<400> 13

gac aac aag tgc aag tgt gct cgt att act tct aga atc atc cgt agc	48
Asp Asn Lys Cys Lys Cys Ala Arg Ile Thr Ser Arg Ile Ile Arg Ser	
1 5 10 15	

tca gag gac cca aat gaa gat ata gtc gaa cgt aac atc cgt atc atc	96
Ser Glu Asp Pro Asn Glu Asp Ile Val Glu Arg Asn Ile Arg Ile Ile	
20 25 30	

gtc cca ctg aat aac cgg gag aat atc tca gat cct aca agt ccg ttg	144
Val Pro Leu Asn Asn Arg Glu Asn Ile Ser Asp Pro Thr Ser Pro Leu	
35 40 45	

cgc aca cgc ttc gta tac cac ctg tca gat ctg tgt aag aag tgt gat	192
Arg Thr Arg Phe Val Tyr His Leu Ser Asp Leu Cys Lys Lys Cys Asp	
50 55 60	

cca aca gag gta gag ctg gac aat cag ata gtc act gcg act caa agc	240
Pro Thr Glu Val Glu Leu Asp Asn Gln Ile Val Thr Ala Thr Gln Ser	
65 70 75 80	

aac att tgc gat gag gac agc gct aca gaa acc tgc tac tgaattc	286
Asn Ile Cys Asp Glu Asp Ser Ala Thr Glu Thr Cys Tyr	
85 90	

<210> 14

<211> 105

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(105)

<220>

<223> Description of Artificial Sequence: Synthetic nucleotide sequence

<400> 14

gat ctg tgt aag aag tgt gat cca aca gag gta gag ctg gac aat cag	48
Asp Leu Cys Lys Lys Cys Asp Pro Thr Glu Val Glu Leu Asp Asn Gln	
1 5 10 15	

ata gtc act gcg act caa agc aac att tgc gat gag gac agc gct aca	96
Ile Val Thr Ala Thr Gln Ser Asn Ile Cys Asp Glu Asp Ser Ala Thr	
20 25 30	

gaa acc tgc	105
Glu Thr Cys	
35	

<210> 15

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 15

gatcaggaag atgaacgtat tgttctgggt gacaacaagt gcaagtgtgc tcgtattact 60
t 61

<210> 16

<211> 198

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 16

gcgatgacga cgataaggcc caaacggaga cctgtactgt tgcgcctcgt gaacggcaaa 60
actgcggatt cccggaagta acaccctctc agtgcgctaa taaaggctgc tgttttgatg 120
acacggtacg gggcgttccg tgggtcttct accccaatac aattgacgtt ccgcctgaag 180
aagagtgcga gttttaag 198

<210> 17

<211> 138

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
peptide

<400> 17

Asp	Gln	Glu	Asp	Glu	Arg	Ile	Val	Leu	Val	Asp	Asn	Lys	Cys	Lys	Cys	
-1	1					5					10					
Ala	Arg	Ile	Thr	Ser	Arg	Ile	Ile	Arg	Ser	Ser	Glu	Asp	Pro	Asn	Glu	
15					20					25					30	
Asp	Ile	Val	Glu	Arg	Asn	Ile	Arg	Ile	Ile	Val	Pro	Leu	Asn	Asn	Arg	
					35				40					45		
Glu	Asn	Ile	Ser	Asp	Pro	Thr	Ser	Pro	Leu	Arg	Thr	Arg	Phe	Val	Tyr	
			50					55					60			
His	Leu	Ser	Asp	Leu	Cys	Lys	Lys	Cys	Asp	Pro	Thr	Glu	Val	Glu	Leu	
			65				70					75				
Asp	Asn	Gln	Ile	Val	Thr	Ala	Thr	Gln	Ser	Asn	Ile	Cys	Asp	Glu	Asp	
	80					85					90					
Ser	Ala	Thr	Glu	Thr	Cys	Ser	Thr	Tyr	Asp	Arg	Asn	Lys	Cys	Tyr	Thr	
95					100					105					110	

Ala Val Val Pro Leu Val Tyr Gly Gly Glu Thr Lys Met Val Glu Thr
 115 120 125

Ala Leu Thr Pro Asp Ala Cys Tyr Pro Asp
 130 135

<210> 18
 <211> 71
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 peptide

<400> 18
 Asp Gln Lys Cys Lys Cys Ala Arg Ile Thr Ser Arg Ile Ile Arg Ser
 1 5 10 15
 Ser Glu Asp Pro Asn Glu Asp Ile Val Glu Arg Asn Ile Arg Ile Ile
 20 25 30
 Val Pro Leu Asn Asn Arg Glu Asn Ile Ser Asp Pro Thr Ser Pro Leu
 35 40 45
 Arg Thr Arg Phe Val Tyr His Leu Ser Asp Leu Cys Lys Lys Asp Glu
 50 55 60
 Asp Ser Ala Thr Glu Thr Cys
 65 70

<210> 19
 <211> 49
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 peptide

<400> 19
 Ser Arg Ile Ile Arg Ser Ser Glu Asp Pro Asn Glu Asp Ile Val Glu
 1 5 10 15
 Arg Asn Ile Arg Ile Ile Val Pro Leu Asn Asn Arg Glu Asn Ile Ser
 20 25 30
 Asp Pro Thr Ser Pro Leu Arg Thr Arg Phe Val Tyr His Leu Ser Asp
 35 40 45

Leu

<210> 20
 <211> 12

<212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 20
 Asp Gln Lys Cys Lys Cys Ala Arg Ile Thr Ser Arg
 1 5 10

<210> 21
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 21
 Asp Leu Cys Lys Lys Asp Glu Asp Ser Ala Thr Glu Thr Cys
 1 5 10

<210> 22
 <211> 36
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 22
 Ser Thr Tyr Asp Arg Asn Lys Cys Tyr Thr Ala Val Val Pro Leu Val
 1 5 10 15

 Tyr Gly Gly Glu Thr Lys Met Val Glu Thr Ala Leu Thr Pro Asp Ala
 20 25 30

 Cys Tyr Pro Asp
 35

<210> 23
 <211> 93
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 23
 Asp Asn Lys Cys Lys Cys Ala Arg Ile Thr Ser Arg Ile Ile Arg Ser
 1 5 10 15

Ser Glu Asp Pro Asn Glu Asp Ile Val Glu Arg Asn Ile Arg Ile Ile
 20 25 30
 Val Pro Leu Asn Asn Arg Glu Asn Ile Ser Asp Pro Thr Ser Pro Leu
 35 40 45
 Arg Thr Arg Phe Val Tyr His Leu Ser Asp Leu Cys Lys Lys Cys Asp
 50 55 60
 Pro Thr Glu Val Glu Leu Asp Asn Gln Ile Val Thr Ala Thr Gln Ser
 65 70 75 80
 Asn Ile Cys Asp Glu Asp Ser Ala Thr Glu Thr Cys Tyr
 85 90

<210> 24

<211> 35

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 24

Asp Leu Cys Lys Lys Cys Asp Pro Thr Glu Val Glu Leu Asp Asn Gln
 1 5 10 15

Ile Val Thr Ala Thr Gln Ser Asn Ile Cys Asp Glu Asp Ser Ala Thr
 20 25 30

Leu Trp Thr
 35

<210> 25

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 25

Asp Gln Glu Asp Glu Arg Ile Val Leu Val Asp Asn Lys Cys Lys Cys
 1 5 10 15

Ala Arg Ile Thr Ser Arg
 20

<210> 26

<211> 66

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 26

Cys Ser Asp Asp Asp Lys Ala Gln Thr Glu Thr Cys Thr Val Ala
 1 5 10 15

Pro Arg Glu Arg Gln Asn Cys Gly Phe Pro Gly Val Thr Pro Ser Gln
 20 25 30

Cys Ala Asn Lys Gly Cys Cys Phe Asp Asp Thr Val Arg Gly Val Pro
 35 40 45

Trp Cys Phe Tyr Pro Asn Thr Ile Asp Val Pro Pro Glu Glu Glu Cys
 50 55 60

Glu Phe
 65

<210> 27

<211> 421

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic complementary nucleotide sequence

<400> 27

gaattcagtc cggatagcat gcatcgggag taagggcagt ttccaccatt tttgtctctc 60
 caccatacac gagcggaacc acggccgtgt agcatttggt cctatcgtag gtgctgcagg 120
 tttctgtagc gctgtcctca tcgcaaagt tgctttgagt cgcagtgact atctgattgt 180
 ccagctctac ctctgttgga tcacacttct tacacagatc tgacaggttg tatacgaagc 240
 gtgtgcgcaa cggacttgta ggatctgaga tattctcccg gttattcagt gggacgatga 300
 tacggatgtt acgttcgact atatcttcat ttgggtcctc tgagctacgg atgattctag 360
 aagtaatacg agcacacttg cacttggtgt caaccagaac aatacgttca tcttcctgat 420
 c 421

<210> 28

<211> 219

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic complementary nucleotide sequence

<400> 28

aattcagcag gtttctgtag cgctgtcctc atccttctta cacagatctg acaggtggta 60
 tacgaagcgt gtgcgcaacg gacttgtagg atctgagata ttctcccggg tattcagtg 120
 gacgatgata cggatgttac gttcgactat atcttcattt gggtcctctg agctacggat 180
 gattctagaa gtaatacagag cacacttgca cttctgata 219

<210> 29
 <211> 140
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 complementary nucleotide sequence

<400> 29
 gatctgacag gtggtatacg aagcgtgtgc gcaacggact tgtaggatct gagatattct 60
 cccgggttatt cagtgggacg atgatacggg tgttacgttc gactatatct tcatttgggt 120
 cctctgagct acggatgatt 140

<210> 30
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 complementary nucleotide sequence

<400> 30
 ctagaagtaa tacgagcaca cttgcacttc t 31

<210> 31
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 complementary nucleotide sequence

<400> 31
 aattcagcag gtttctgtag cggactcttc atccttctta caca 44

<210> 32
 <211> 117
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 complementary nucleotide sequence

<400> 32
 aattcagtcg gggtagcatg catcgggcgt aagggcagtt tccaccattt ttgtctctcc 60
 accatacacg agcggaacca cggccgtgta gcatttggtc ctatcgtagg tgctgca 117

<210> 33
 <211> 282
 <212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
complementary nucleotide sequence

<400> 33

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tcagtagcag gtttctgtag cgctgtcctc atcgcaaatg ttgctttgag tcgcagtgac 60
tatctgattg tccagctcta cctctgttgg atcacacttc ttacacagat ctgacagggtg 120
gtatacgaag cgtgtgcgca acggacttgt aggatctgag atattctccc gggtattcag 180
tgggacgatg atacggatgt tacgttcgac tatatcttca tttgggtcct ctgagctacg 240
gatgattcta gaagtaatac gagcacactt gcacttctga tc 282
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<210> 34

<211> 105

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
complementary nucleotide sequence

<400> 34

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gcaggtttct gtagcgctgt cctcatcgca aatgttgctt tgagtcgcag tgactatctg 60
attgtccagc tctacctctg ttggatcaca cttcttacac agatc 105
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<210> 35

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
complementary nucleotide sequence

<400> 35

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ctagaagtaa tacgagcaca cttgcacttg ttgtcaacca gaacaatacg ttcattcttc 60
t 61
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<210> 36

<211> 205

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
complementary nucleotide sequence

<400> 36

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aattcttaaa actcgcactc ttcttcaggc ggaacgtcaa ttgtattggg gtagaagcac 60
cacggaagcc ccgtaccgtg tcatcaaaac agcagccttt attagcgcac tgagagggtg 120
ttacttcgag gaatccgcag ttttgccgtt cacgaggcgc aacagtacag gtctccgttt 180
gggccttatc gtcgtcatcg cttca 205
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<210> 37
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Domain 1
peptide containing beta-sheet character

<400> 37
Asp Gln Glu Asp Glu Arg Ile Val Leu Val Asp Asn Lys
1 5 10

<210> 38
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Illustrative
peptide

<400> 38
Glu Asn Leu Tyr Phe Gln Ser
1 5

<210> 39
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker peptide

<400> 39
Lys Ala His Lys Val Asp Met Val Gln Tyr Thr
1 5 10

<210> 40
<211> 4
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Linker peptide

<400> 40
Val Gln Tyr Thr
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<210> 41
<211> 6
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker peptide

<400> 41

Glu Lys Ala Val Ala Asp

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5

<210> 42

<211> 131

<212> DNA

<213> Artificial Sequence

<220>

<221> CDS

<222> (1)..(78)

<220>

<223> Description of Artificial Sequence: Synthetic
nucleotide sequence

<400> 42

atg aaa ttc tta gtc aac gtt gcc ctt ttt atg gtc gta tac att tct 48

Met Lys Phe Leu Val Asn Val Ala Leu Phe Met Val Val Tyr Ile Ser

1

5

10

15

tac atc tat gcg gat ccg agc tcg agt gct ctagatctgc agctggtacc 98

Tyr Ile Tyr Ala Asp Pro Ser Ser Ser Ala

20

25

atggaattcg aagcttggag tcgactctgc tga 131

<210> 43

<211> 26

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
peptide

<400> 43

Met Lys Phe Leu Val Asn Val Ala Leu Phe Met Val Val Tyr Ile Ser

1

5

10

15

Tyr Ile Tyr Ala Asp Pro Ser Ser Ser Ala

20

25

<210> 44

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Intracellular
targeting signal

<400> 44

Lys Asp Glu Leu

1

<210> 45

<211> 16

<212> PRT

<213> Homo sapiens

<400> 45

Ala Ile Gln Asp Pro Arg Leu Phe Ala Glu Glu Lys Ala Val Ala Asp

1

5

10

15

<210> 46

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 46

gatcaggaag atgaacgtat tggtctgggt gacaacaagt gcaagtgtgc tcgtattact 60
t 61

<210> 47

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 47

ctagaagtaa tacgagcaca cttgcacttg ttgtcaacca gaacaatagc ttcattctcc 60
t 61

<210> 48

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 48

gatcagaagt gcaagtgtgc tcgtattact t

31

<210> 49
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 49
 ctagaagtaa tacgagcaca cttgcacttc t 31

<210> 50
 <211> 61
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 50
 gatcaggaag atgaacgtat tggtctgggt gacaacaagt gcaagtcgc tcgtattact 60
 t 61

<210> 51
 <211> 61
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 51
 ctagaagtaa tacgagcgga cttgcacttg ttgtcaacca gaacaatacg ttcattctcc 60
 t 61

<210> 52
 <211> 61
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 52
 gatcaggaag atgaacgtat tggtctgggt gacaacaagt gcaagggtgc tcgtattact 60
 t 61

<210> 53
<211> 61
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 53
ctagaagtaa tacgagcaac cttgcacttg ttgtcaacca gaacaatacg ttcattcttc 60
t 61

<210> 54
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 54
ctagaatcat ccgtagctca gaggacccaa atgaagatat agtcgaa 47

<210> 55
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 55
gatacggatg ttacgttcga ctatatcttc atttgggtcc tctgagctac ggatgatt 58

<210> 56
<211> 49
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 56
cgtaacatcc gatatcatcgt ccactgaat aaccgggaga atatctcag 49

<210> 57
<211> 49
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 57

cgtaacatcc gtatcatcgt cccactgaat aaccgggagc acatctcag

49

<210> 58

<211> 49

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 58

acggacttgt aggatctgag atattctccc gggtattcag tgggacgat

49

<210> 59

<211> 49

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 59

acggacttgt aggatctgag atgtgctccc gggtattcag tgggacgat

49

<210> 60

<211> 44

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 60

atcctacaag tccgttgccg acacgcttcg tataccacct gtca

44

<210> 61

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 61

gatctgacag gtggtatacg aagcgtgtgc gca

33

<210> 62
 <211> 60
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 62
 gatctgtgta agaagtgtga tccaacagag gtagagctgg acaatcagat agtcactgca 60

<210> 63
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 63
 gatctgtgta agaaggatga ggacagcgct acagaaacct gctg 44

<210> 64
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 64
 aattcagcag gtttctgtag cgctgtcctc atccttotta caca 44

<210> 65
 <211> 62
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 65
 gatctgtgta agaaggatga ggacagcgct acagaaacct gctacgagaa ggatgagctg 60
 tg 62

<210> 66
 <211> 62

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 66

aattcacagc tcatccttcg cgtcgcaggt ttctgtagcg ctgtcctcat ccttcttaca 60
ca 62

<210> 67

<211> 59

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 67

gatctgtgta agaagtctga tatcgatgaa gattccgcta cagaaacctg cagcacatg 59

<210> 68

<211> 59

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 68

aattcatgtg ctgcaggttt ctgtagcgga atcttcatcg atatcagact tcttacaca 59

<210> 69

<211> 64

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 69

gatctgtcta agaagtctga tatcgatgaa gattacagat tcttcagact atagctactt 60
ctaa 64

<210> 70

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 70

aatcttcacg gatatcagac ttcttagaca

30

<210> 71

<211> 64

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 71

gatctgggta agaagtctga tatcgatgaa gattaccaat tcttcagact atagctactt 60
ctaa 64

<210> 72

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 72

aatcttcacg gatatcagac ttcttaacca

30

<210> 73

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 73

attgtccagc tctacctctg ttggatcaca cttcttacac a

41

<210> 74

<211> 46

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 74
actcaaagca acatttgcca tgaggacagc gctacagaaa cctgca 46

<210> 75
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 75
ggtttctgta gcgctctgct catcgcaaat gttgctttga gtcgcagtga ctatctg 57

<210> 76
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 76
gcacctacga taggaacaaa tgctacacgg ccgtgggtcc gctcgtgtat ggtggagag 59

<210> 77
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 77
gagcggaacc acggccgtgt agcatttggt cctatcgtag gtgctgca 48

<210> 78
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 78
acaaaaatgg tggaaactgc ccttacgccc gatgcatgct atccggactg 50

<210> 79
<211> 69

<212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 79

aattcagtcc ggatagcatg catcgggcgt aagggcagtt tccaccattt ttgtctctcc 60
 accatacac 69

<210> 80

<211> 62

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 80

acaaaaatgg tggaaactgc ccttacgccc gatgcatgct atccggacaa ggatgaattg 60
 tg 62

<210> 81

<211> 81

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 81

aattcacaat tcatccttgt ccgcatagca tgcacgggc gtaagggcag tttccaccat 60
 tttgtctct ccaccatata c 81

<210> 82

<211> 88

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 82

gatcaggtcg ctgccatcca agacccgagg ctgttcgccg aagagaaggc cgtcgctgac 60
 tccaagtgca agtgtgctcg tattactt 88

<210> 83

<211> 88

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 83

ctagaagtaa tacgagcaca cttgcacttg gagtcagcga cggccttctc ttcggcgaac 60
agcctcgggt cttggatggc agcgacct 88

<210> 84

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 84

tggtacgaat tccaggsma rctgcagsag tcrq 34

<210> 85

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 85

acagatatcg ggatttctcg cagactc 27

<210> 86

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 86

acagaatatc'gtcaacacct tcccaccc 28

<210> 87

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 87

acaaagcttt tatttaccg acagacggtc 30

<210> 88
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 88
 gtccccccctc gagcgayaty swgmtsaccc artct 35

<210> 89
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 89
 aactgcagc agttggtgca gcatcagc 28

<210> 90
 <211> 53
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 90
 ctgcaggaag cggaagcgga ggaagcggaa gcggaggaag cggaagcgaa ttc 53

<210> 91
 <211> 47
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Linker
 complement

<400> 91
 ccttcgcctt cgcctccttc gccttcgcct ccttcgcctt cgcttaa 47

<210> 92
 <211> 76
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Signal peptide

<400> 92
acaggatcca tggaaacccc agcgcagctt ctcttctctcc tgctactctg gctcccaaga 60
taccaccgga cccggg 76

<210> 93
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 93
tgggtacagat ctaggtsmar ctgcagsagt crg 33

<210> 94
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 94
acaggaattc aattttcttg tccacctt 28

<210> 95
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 95
gttctagaga yatyswgmts acccartct 29

<210> 96
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 96
acaccgcggc agttggtgca gcatcagc 28

<210> 97
<211> 75
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic heavy chain nucleotide sequence

<400> 97

acaggatcca tggaaacccc agcgcagctt ctcttcctcc tgctactctg gctcccagat 60
accaccggaa gatct 75

<210> 98

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic light chain nucleotide sequence

<400> 98

acaactagta tggaaacccc agcgcagctt ctcttcctcc tgctactctg gctcccagat 60
accaccggat ctaga 75

<210> 99

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker peptide

<400> 99

Val Ala Val Gln Ser Ala Gly Thr Pro Ala Ser Gly Ser
1 5 10

<210> 100

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Nuclear targeting sequence

<400> 100

Cys Ala Ala Pro Lys Lys Lys Arg Lys Val
1 5 10

<210> 101

<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Nuclear targeting sequence

<400> 101

Cys Ala Ala Lys Arg Pro Pro Ala Ala Ile Lys Lys Ala Ala Ala Gly
 1 5 10 15

Gln Ala Lys Lys Lys Lys
 20

<210> 102

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Intracellular
 targeting signal

<400> 102

His Asp Glu Leu
 1

<210> 103

<211> 77

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 103

gcgatgacga cgataaggcc caaacggaga cctgtactgt tgcgcctcgt gaacggcaaa 60
 actgcggatt cccggaa 77

<210> 104

<211> 66

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<400> 104

gttttgccgt tcacgaggcg caacagtaca ggtctccggt tgggccttat cgtcgtcatc 60
 gttca 66

<210> 105

<211> 72

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 105

gtaacaccct ctcagtgcgc taataaaggc tgctgttttg atgacacggt acggggcggt 60
ccgtgggtgct tc 72

<210> 106

<211> 72

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 106

gccccgtacc gtgtcatcaa aacagcagcc tttattagcg cactgagagg gtgttacttc 60
cggaatccg ca 72

<210> 107

<211> 49

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 107

taccccaata caattgacgt tccgcctgaa gaagagtgcg agccgtaag 49

<210> 108

<211> 68

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 108

aattcttacg gctcgactc ttcttcaggc ggcaagtcaa ttgtattggg gtagaagcac 60
cacggaac 68

<210> 109

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker peptide

<400> 109

Pro Leu Gly Ile Ile Gly Gly
1 5

<210> 110

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Linker peptide

<400> 110

Ile Ile Gly Gly
1

<210> 111

<211> 30

<212> PRT

<213> Homo sapiens

<400> 111

Val Arg Asp Gln Ala Gln Glu Asn Arg Ala Ser Gly Asp Ala Gly Ser
1 5 10 15Ala Asp Gly Gln Ser Arg Ser Ser Ser Ser Lys Val Leu Phe
20 25 30

<210> 112

<211> 25

<212> PRT

<213> Homo sapiens

<400> 112

Val Pro Ser Thr Pro Pro Thr Pro Ser Pro Ser Thr Pro Pro Thr Pro
1 5 10 15Ser Pro Ser Cys Cys His Pro Arg Leu
20 25

<210> 113

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Illustrative peptide

<400> 113

Glu Gln Lys Leu Ile Ser Glu Asp Leu
1 5